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Standard Architecture

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What is an Firewall

- Firewall is a network security device which monitors incoming and outgoing traffic on basis of set of security rules.
- These rules are created on basis of source destination and port and action
- Firewall is a L3/L4 device

What is an NGFW Firewall (Next Generation Firewall)

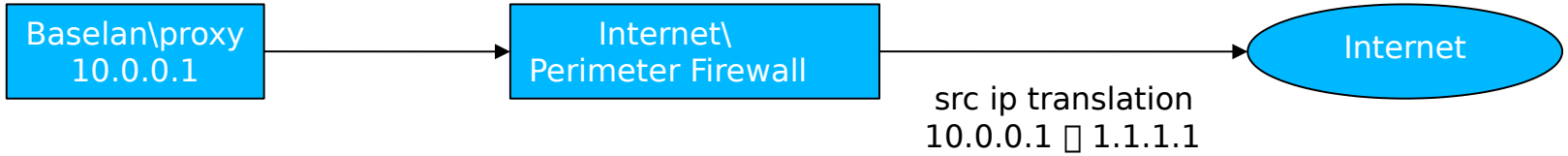
- NGFW Firewalls are one which combines the capabilities of traditional firewall along with additional protection layers like an IPS , application detection, user identification etc

IP ADDRESS

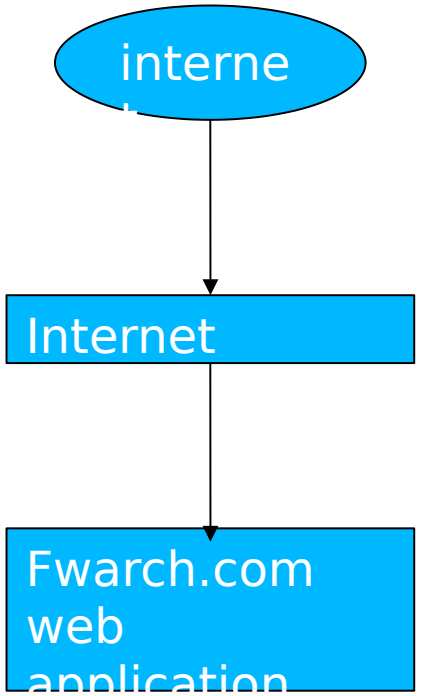
- An IP address is a unique address that identifies a device on the internet or a local network
- Private IP address - these IP addresses are routable on private network. They are assigned to entities within the private network.
- Public IP addresses – These are IP addresses are routable on internet. They are used for communication over internet
- Types of private IP addresses
    - Class A: 10.0.0.0 — 10.255.255.255
    - Class B: 172.16.0.0 — 172.31.255.255
    - Class C: 192.168.0.0 — 192.168.255.255

What is NAT (Network Address Translation)

- Nat is mapping an IP address or set of IP address to another set of IP address.
- NAT is traditionally used to map a multiple private IP addresss to a public IP.
- Types of NAT
- Source NAT for outbound traffic. Source ip is translated.
- Proxy for reaching internet is source natted.



- Destination NAT – Destination IP is translated
- Destination NAT is done mostly in case of inbound traffic.



Source IP 1.1.1.1 is trying to access fwarch.com which resolves to ip 2.2.2.2 which is now the destination IP

Destination IP 2.2.2.2 translates to 172.17.1.1 which is ip of webserver. So now destionation ip will change to 172.17.1.1

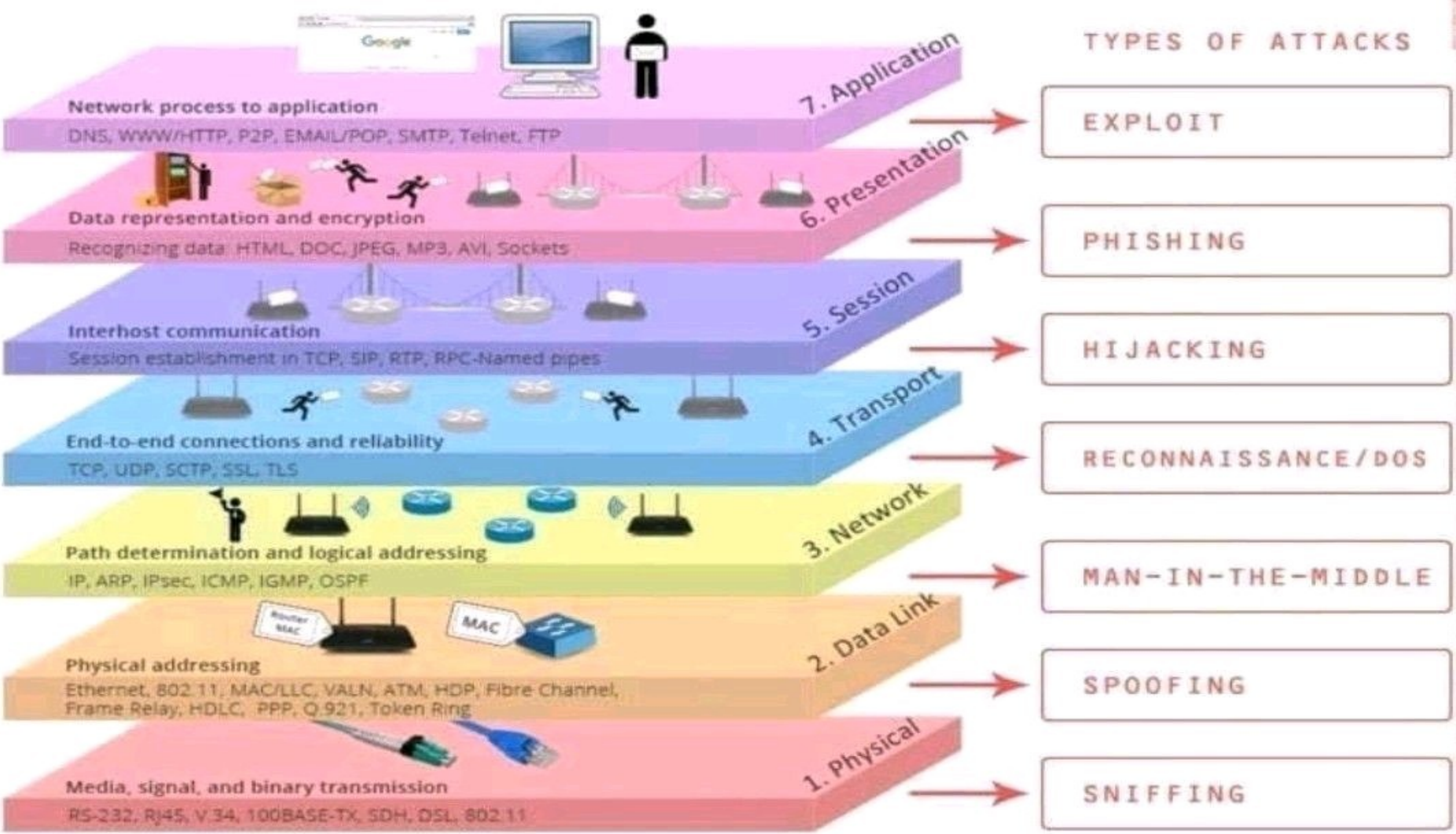
Webserver
172.17.1.1

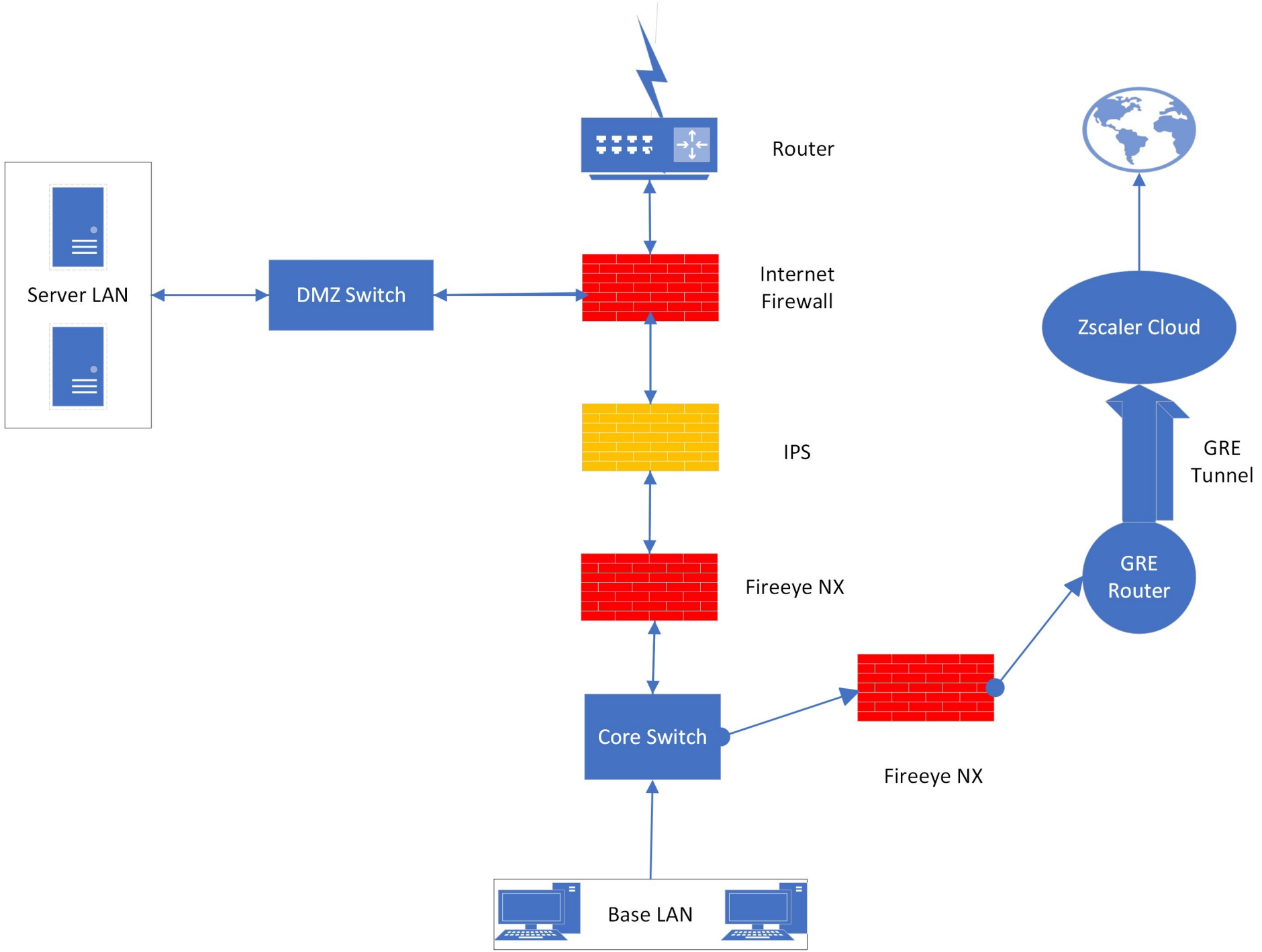
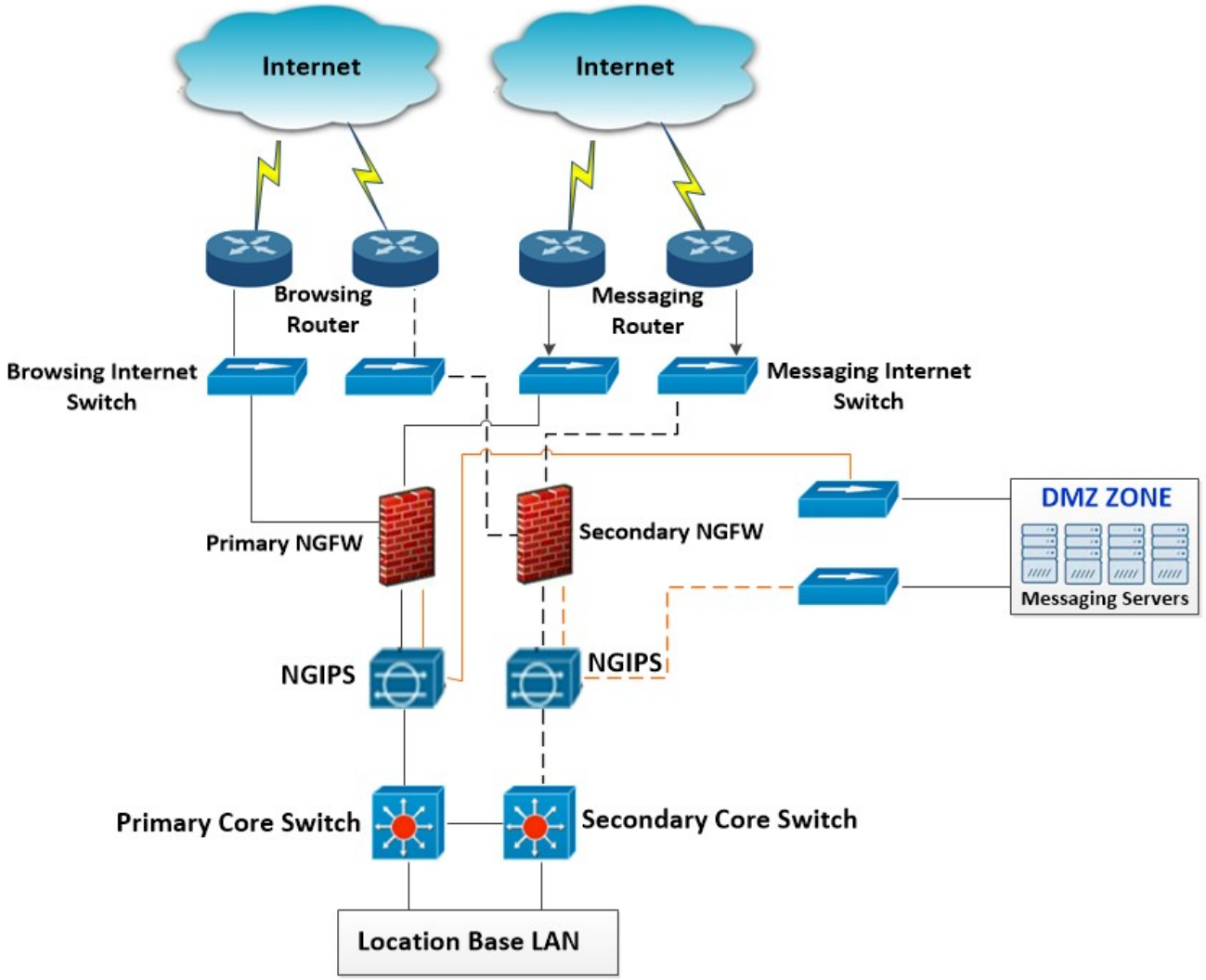
Routing

What is Routing

- Routing is process of path selection from a given source to a destination
- Its generally done to select most optimal path between given source and Destination

- There are two types of routing
- Static routes – manually entered routes in a network device to route traffic to a destination
- Dynamic routing – Dynamic routing is a technique perfomed using routing protocols\ algorithms to determine most optimal path to a destination based on certain parameters.
- For example: RIP , OSPF, EIGRP


Google
Network process to application
DNS, WWW/HTTP, P2P, EMAIL/POP, SMTP, Telnet, FTP
7. Application
Data representation and encryption
Recognizing data: HTML, DOC, JPEG, MP3, AVI, Sockets
6. Presentation
Interhost communication
Session establishment in TCP, SIP, RTP, RPC-Named pipes
5. Session
End-to-end connections and reliability
TCP, UDP, SCTP, SSL, TLS
4. Transport
Path determination and logical addressing
IP, ARP, IPsec, ICMP, IGMP, OSPF
3. Network
Router MAC
MAC
Physical addressing
Ethernet, 802.11, MAC/LLC, VALN, ATM, HDP, Fibre Channel,
Frame Relay, HDLC, PPP, Q.921, Token Ring
2. Data Link
Media, signal, and binary transmission
RS-232, RJ45, V.34, 100BASE-TX, SDH, DSL, 802.11
1. Physical
TYPES OF ATTACKS
EXPLOIT
PHISHING
HIJACKING
RECONNAISSANCE/DOS
MAN-IN-THE-MIDDLE
SPOOFING
SNIFFING


Router
Server LAN
DMZ Switch
Internet
Firewall
Zscaler Cloud
IPS
GRE
Tunnel
Fireeye NX
GRE
Router
Core Switch
Fireeye NX
Base LAN

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